

**WHAT IS CLAIMED IS:**

1. A method for generating a stream of N symbols by puncturing a stream of repeated symbols in a system including an encoder for generating a stream of L symbols, a repeater for repeating the stream of L symbols, and a puncturer for puncturing the stream of repeated symbols and generating a stream of N symbols, where N is larger than L, the method comprising the steps of:

generating a stream of LM repeated symbols by repeating the stream of L symbols M times, where M is an minimum integer larger than  $N/L$ ;

10 calculating a first puncturing interval D1 defined as a minimum integer larger than  $LM/P$  for a number,  $P=LM-N$ , of symbols to be punctured, and a first symbol puncturing number P1 defined as a maximum integer smaller than  $LM/D1$ ;

calculating a second symbol puncturing number P2 indicating a  
15 difference between the number P of the symbols to be punctured and the first symbol puncturing number P1, and a second puncturing interval D2 defined as  $sD1$  for a selected one integer s out of integers smaller than or equal to a maximum integer smaller than  $P1/P2$ ; and

generating a stream of N symbols by puncturing the stream of LM  
20 repeated symbols at the first puncturing interval D1 and the second puncturing interval D2.

2. The method as claimed in claim 1, wherein positions of the  
25 symbols punctured at the first puncturing interval D1 are inconsistent with positions of the symbols punctured at the second puncturing interval D2.

3. The method as claimed in claim 1, wherein the symbols  
punctured at the first puncturing interval D1 are equivalent to symbols located at  
30 the positions corresponding to a multiple of D1 from initial symbols in the stream

of LM repeated symbols.

4. The method as claimed in claim 1, wherein the symbols punctured at the second puncturing interval D2 are equivalent to symbols located at the positions corresponding to a multiple of D2 plus an offset from initial symbols in the stream of LM repeated symbols.

5. The method as claimed in claim 4, wherein the offset is 1.

6. The method as claimed in claim 4, wherein the offset is -1.

7. The method as claimed in claim 4, wherein the offset is equivalent to a value determined by subtracting D2 from a maximum integer smaller than D1/2.

8. The method as claimed in claim 4, wherein the offset is equivalent to a value determined by multiplying -1 by a value obtained by adding D2 to a maximum integer smaller than D1/2.

9. An apparatus for matching L coded symbols determined according to a variation of a data rate to an interleaver size N, wherein N is larger than L, the apparatus comprising:

an encoder for generating a stream of L coded symbols;

a repeater for repeating the stream of L coded symbols M times and outputting a stream of LM repeated symbols, wherein M is defined as a minimum integer larger than N/L;

a puncturing pattern generator for (a) determining a first puncturing interval D1 defined as a minimum integer larger than LM/P for a number,  $P=LM-N$ , of symbols to be punctured, and a first symbol puncturing number P1 defined as a maximum integer smaller than LM/D1;

(b) calculating a second symbol puncturing number P2 indicating a difference between the number P of the symbols to be punctured and the first symbol puncturing number P1, and a second puncturing interval D2 defined as sD1 for a selected one integer s out of integers smaller than or equal to a maximum integer smaller than P1/P2;

(c) generating a puncturing pattern used for puncturing the stream of LM repeated symbols at the first puncturing interval D1 and the second puncturing interval D2; and

a puncturer for puncturing the stream of LM repeated symbols according to the puncturing pattern at the first puncturing interval D1 and the second puncturing interval D2, and generating a stream of N symbols.

10. The apparatus as claimed in claim 9, further comprising a symbol index generator for generating indexes indicating respective symbols constituting the stream of LM symbols, and providing the generated indexes to the puncturing pattern generator, wherein the puncturing pattern generator generates the puncturing pattern indicating symbols corresponding to the first and second puncturing intervals D1 and D2 out of the symbols in the stream of LM symbols.

20

11. The apparatus as claimed in claim 9, further comprising an interleaver for interleaving an output of the puncturer before transmission.

12. The apparatus as claimed in claim 9, wherein positions of the symbols punctured at the first puncturing interval D1 are inconsistent with positions of the symbols punctured at the second puncturing interval D2.

13. The apparatus as claimed in claim 9, wherein the symbols punctured at the first puncturing interval D1 are equivalent to symbols located at the positions corresponding to a multiple of D1 from initial symbols in the stream

of LM repeated symbols.

14. The apparatus as claimed in claim 9, wherein the symbols punctured at the second puncturing interval D2 are equivalent to symbols located  
5 at the positions corresponding to a multiple of D2 plus an offset from initial symbols in the stream of LM repeated symbols.

15. The apparatus as claimed in claim 14, wherein the offset is 1.

10 16. The apparatus as claimed in claim 14, wherein the offset is -1.

17. The apparatus as claimed in claim 14, wherein the offset is equivalent to a value determined by subtracting D2 from a maximum integer smaller than D1/2.

15

18. The apparatus as claimed in claim 14, wherein the offset is equivalent to a value determined by multiplying -1 by a value obtained by adding D2 to a maximum integer smaller than D1/2.

20 19. A method for matching L coded symbols determined according to a variation of a data rate to an interleaver size N, wherein N is larger than L, the method comprising the steps of:

repeating a stream of L coded symbols M times and outputting a stream of LM repeated symbols, wherein M is defined as a minimum integer larger than  
25  $N/L$ ;

puncturing the stream of LM repeated symbols by a first symbol puncturing number P1 according to a first puncturing pattern A, wherein P1 is defined as a maximum integer smaller than  $LM/D1$ , wherein the first puncturing pattern A indicates a multiple of a first puncturing interval D1 defined as a  
30 minimum integer larger than  $LM/P$  for a number,  $P=LM-N$ , of symbols to be

punctured; and

puncturing remaining symbols after puncturing of the stream of LM symbols at the first puncturing interval D1, according to a second puncturing pattern B and outputting a stream of N symbols, when the second symbol  
 5 puncturing number P2 indicating a difference between the number P of the symbols to be punctured and the first symbol puncturing number P1 is larger than 0, wherein the second puncturing pattern B is equivalent to a value determined by adding an offset to a multiple of the second puncturing interval D2 which is defined as sD1 for a selected one integer s out of integers smaller than or equal to  
 10 a maximum integer smaller than P1/P2.

20. The method as claimed in claim 19, wherein symbol positions determined by the first puncturing pattern A are inconsistent with symbol positions determined by the second puncturing pattern B.

15

21. The method as claimed in claim 19, wherein the offset is 1.

22. The method as claimed in claim 19, wherein the offset is -1.

20 23. The method as claimed in claim 19, wherein the offset is equivalent to a value determined by subtracting D2 from a maximum integer smaller than D1/2.

24. The method as claimed in claim 17, wherein the offset is  
 25 equivalent to a value determined by multiplying -1 by a value obtained by adding D2 to a maximum integer smaller than D1/2.